

## ABSTRACT OF DISCLOSURE

An original mesh is provided with a bounding surface and a convex hull surface. A first tessellation links the convex hull to the original mesh, and a second tessellation links the bounding surface to the convex hull. Using the tessellations to find a first intersection between a ray and the original mesh by finding a first intersected polygon of the bounding surface, and then traversing adjacent intersected polygons starting from the first intersection until the intersection is found. When the ray is moved, a second ray-surface intersection can be found by finding a polygon locally near the first intersection and containing a first intersection with the moved ray, traversing out from the local polygon through adjacent polygons intersected by the moved ray, and determining whether traversed polygons are unoccluded based on whether they are part of the convex hull surface.